

Homework Questions - Exponents, Variables, and Equations

Write each of the following in expanded and standard form.

ex. $7^3 = 7 \times 7 \times 7 = 343$

a) 8^5 b) 10^5 c) 9^4 d) 3^2

$8^5 = 8 \times 8 \times 8 \times 8 \times 8 = 32768$

$10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 100000$

$9^4 = 9 \times 9 \times 9 \times 9 = 6561$

$3^2 = 3 \times 3 = 9$

Write each of the following as powers
(more than one if possible).

ex. $9 = 3^2$

a) 64 b) 125 c) 100 d) 81

$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 2^6$
 $4 \times 4 \times 4 = 4^3$

$8 \times 8 = 8^2$

b) $125 = 5^3$

c) $100 = 10^2$

d) $81 = 9^2$
 $= 3^4$

$81 = 9 \times 9$
 $3 \times 3 \times 3 \times 3 = 3^4$

Use <, >, or = to make each number sentence true:

$$\begin{array}{l}
 2^3 \text{ --- } 3^2 \quad 512 < 6561 \\
 8^3 \text{ --- } 3^8 \quad 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \\
 4^5 \text{ --- } 5^4 \quad 1024 > 625 \quad 117649 \quad 279936 \\
 7^6 \text{ --- } 6^7 \quad 7 \times 7 \times 7 \times 7 \times 7 \times 7
 \end{array}$$

Problems: Make sure your solutions are organized and convincing. Explain why you have chosen to do everything you do.

Mr Court chooses 9 students, gives them each 9 lamps, and in each lamp there is 9 genies, and each genie grants 9 wishes.

How many wishes are available in Mr. Court's class?

9 kids x 9 lamps x 9 genies x 9 wishes = 9^4 wishes
 6561 wishes.

To prove his strength, Mr Court karate chops his desk in half. People still doubt him, so he then karate chops each piece in half. He then karate chops each of those pieces in half. He repeated this 13 total times. How many pieces has he chopped his desk into?

2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 = 2^{13} = 8192 pieces of table